CLAIMS

What is claimed is:

1   1.   A method of determining at least one candidate patch for human

2   faces in a color graphic image, comprising:

3   determining a first area wherein a color gradient has a low value;

4   determining a second area wherein an intensity value has a high value;

5   performing a logical AND on said first area and said second area to

6   create a third area; and

7   selecting portions of said third area with suitable hue saturation to form

8   said at least one candidate patch.

1   2.   The method of claim 1, wherein said determining said first area

2   uses a first threshold value comparison.

1   3.   The method of claim 2, wherein said first threshold value is

2   determined by normalization.

1   4.   The method of claim 1, wherein said determining said second area

2   uses a second threshold value comparison.

1   5.   The method of claim 4, wherein said second threshold is

2   determined by normalization.

1   6.   The method of claim 1, further comprising eroding said third area.

1   7.   The method of claim 6, wherein said eroding is morphological.

1   8.   The method of claim 1, further comprising fitting an ellipse to one

2   of said at least one candidate patch.

1   9.   The method of claim 8, further comprising determining if said

2   ellipse is a bad fit to said one of said at least one candidate patch.

1   10.   The method of claim 9, further processing said one of said at least

2   one candidate patch when said ellipse is a bad fit.

1   11.   The method of claim 10, further comprising determining if said one

2   of said at least one candidate patch is too smooth.

1   12.   A system configured to determine at least one location of a

2   human face in a color graphic image, comprising:

3   a color gradient map configured to indicate true where a color gradient

4   has a low value;

5   an intensity map configured to indicate true where an intensity value has

6   a high value;

7   a combined map configured to indicate true where said color gradient

8   map is true and said intensity map is true; and

9   at least one candidate patch selected from said combined map, wherein

10   said candidate patches each have suitable hue saturation.

1   13.   The system of claim 12, wherein said color gradient map includes a

2   first threshold.

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1   14.   The system of claim 13, wherein said first threshold is determined

2   by normalization.

1   15.   The system of claim 12, wherein said intensity map includes a

2   second threshold.

1   16.   The system of claim 15, wherein said second threshold is

2   determined by normalization.

1   17.   The system of claim 12, wherein said combined map includes an

2   eroded boundary.

1   18.   The system of claim 17, wherein said boundary is morphologically

2   eroded.

1   19.   The system of claim 12, further comprising an ellipse fitted to said

2   at least one candidate patch.

1   20.   The system of claim 19, wherein said ellipse includes a degree of fit

2   measure.

1   21.   The system of claim 20, wherein said at lease one candidate patch

2   is marked for further processing when said degree of fit is bad.

1   22.   The system of claim 21, further comprising a candidate patch

2   examiner configured to determine whether said at least one candidate patch is

3   too smooth.

1   23.   A machine-readable medium having stored thereon instructions for

2   processing elements, which when executed by said processing elements

3   perform the following:

4   determining a first area wherein a color gradient has a low value;

5   determining a second area wherein an intensity value has a high value;

6   performing a logical AND on said first area and said second area to

7   create a third area; and

8   selecting portions of said third area with suitable hue saturation to form

9   at least one candidate patch.

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